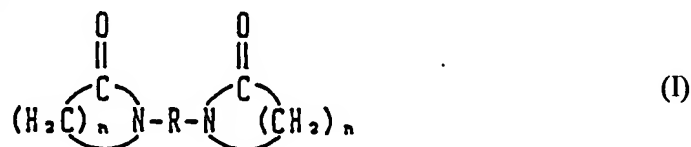


CLAIMS

1. A medical device formed from a thermoplastic polymer composition, the polymer composition comprising a melt mixture product of
- 5 a) at least one terminally reactive polymer, and
- b) a chain extender.
2. A medical device as in claim 1 wherein the terminally reactive polymer has at least one terminal active hydrogen and/or carboxylic acid group thereon.
- 10 3. A medical device as in claim 1 wherein the terminally reactive polymer is selected from the group consisting of polyesters; polyamides; polyurethanes; block copolymers incorporating a polyester, polyamide, polyurethane and/or polyether segment.
- 15 4. A medical device as in claim 3 wherein the polymer composition further comprises a polymer selected from the group consisting of polyolefins, poly(meth)acrylate esters, silicones, and organic rubbers.
5. A medical device as in claim 1 wherein the chain extender comprises a
- 20 bis-lactam compound.
6. A medical device as in claim 5 wherein the bis-lactam compound is represented by the following general formula (I):



in which one or more of the methylene hydrogen atoms thereof may optionally be

substituted by an alkyl or aryl radical; R represents a divalent organic radical; and n is an integer of 2 - 15.

7. A medical device as in claim 6 wherein R is a group of formula (II), (III) or (IV):



where A is a divalent hydrocarbon group, which is optionally interrupted by one or more ether oxygen atoms;



where B is -NH-A-NH, and A is as defined for formula II; and

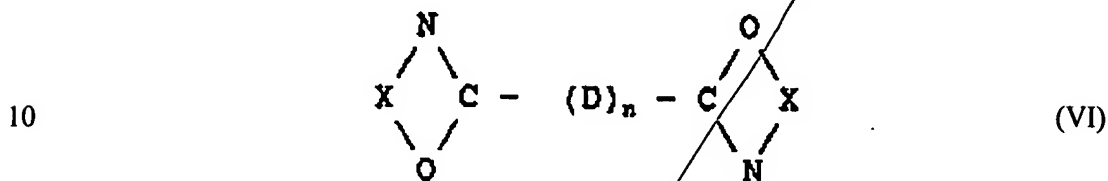


8. A medical device as in claim 5 wherein the bis-lactam compound is employed in said melt mixture product in an amount of from about 0.1 % to about 5% by weight of the terminally reactive polymer.

9. A medical device as in claim 5 wherein the bis-lactam compound is a member selected from the group consisting of N,N'-isophthaloyl bis-caprolactam, N,N'-adipoyl bis-caprolactam, N,N'-terephthaloyl bis-lauro lactam, N,N'-isophthaloyl bis-butyrolactam, carbonyl bis-caprolactam and mixtures thereof.

10. A medical device as in claim 1 wherein the chain extender comprises a bis-oxazoline and/or bis-oxazine compound.

5 11. A medical device as in claim 10 wherein the bis-oxazoline and/or bis-oxazine compound is represented by the formula (VI):



where X is a divalent hydrocarbon group and the rings thereof are 5-membered rings for the bisoxazoline or 6-membered rings for the bisoxazine, respectively; n = 0 or 1; and D
15 is a divalent organic group.

12. A medical device as in claim 10 wherein the bisoxazoline and/or bisoxazine compound is a member selected from the group consisting of
2,2'-bis(2-oxazoline), 2,2'-bis(4-methyl-2-oxazoline), 2,2'-bis(4-phenyl-2-oxazoline),
20 2,2'-bis(4-hexyloxazoline), 2,2'-p-phenylene bis(2-oxazoline), 2,2'-m-phenylene bis(2-oxazoline), 2,2'-tetramethylene bis(4,4'-dimethyl-2-oxazoline) 2,2'-bis(2-oxazine),
2,2'-bis(4-methyl-2-oxazine), 2,2'-bis(4-phenyl-2-oxazine), 2,2'-bis(4-hexyloxazine),
2,2'-p-phenylene bis(2-oxazine), 2,2'-m-phenylene bis(2-oxazine), 2,2'-tetramethylene bis(4,4'-dimethyl-2-oxazine) and mixtures thereof .

25 13. A medical device as in claim 10 wherein the bis-oxazoline and/or bis-oxazine compound is employed in said melt mixture product in an amount of from about 0.1 % to about 4% by weight of the terminally reactive polymer.

30 14. A medical device as in claim 1 wherein the chain extender comprises a modified polyamide chain extender.

15. A medical device as in claim 1 wherein the device is a catheter or a catheter balloon.

5 16. A medical device as in claim 1 wherein the chain extender is incorporated into said melt mixture product in an amount which increases polymer molecular weight but does not substantially promote or induce crosslinking.

10 17. A method of preparing a medical device balloon comprising extruding a polymer composition to form tubing and blowing a segment of the tubing to form the balloon, wherein the polymer composition comprises a melt mixture product of

- a) at least one terminally reactive polymer and
- b) a chain extender.

15 18. A method as in claim 17 wherein the terminally reactive polymer has at least one terminal active hydrogen and/or carboxylic acid group thereon.

19. A method as in claim 17 wherein the terminally reactive polymer is selected from the group consisting of polyesters; polyamides; polyurethanes; block
20 copolymers incorporating a polyester, polyamide, polyurethane and/or polyether segment.

20. A method as in claim 19 wherein the polymer composition further comprises a polymer selected from the group consisting of polyolefins, poly(meth)acrylate esters, silicones, and organic rubbers.

25 21. A method as in claim 17 wherein the chain extender comprises a bis-lactam compound.

22. A method as in claim 21 wherein the bis-lactam compound is employed in
30 said melt mixture product in an amount of from about 0.1 % to about 5% by weight of the terminally reactive polymer.

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23. A method as in claim 21 wherein the bis-lactam compound is a member selected from the group consisting of N,N'-isophthaloyl bis-caprolactam, N,N'-adipoyl bis-caprolactam, N,N'-terephthaloyl bis-lauro lactam, N,N'-isophthaloyl bis-butyrolactam, 5 carbonyl bis-caprolactam and mixtures thereof.
24. A method as in claim 17 wherein the chain extender comprises a bis-oxazoline and/or bis-oxazine compound.
- 10 25. A method as in claim 24 wherein the bisoxazoline and/or bisoxazine compound is a member selected from the group consisting of 2,2'-bis(2-oxazoline), 2,2'-bis(4-methyl-2-oxazoline), 2,2'-bis(4-phenyl-2-oxazoline), 2,2'-bis(4-hexyloxazoline), 2,2'-p-phenylene bis(2-oxazoline), 2,2'-m-phenylene bis(2-oxazoline), 2,2'-tetramethylene bis(4,4'-dimethyl-2-oxazoline) 2,2'-bis(2-oxazine), 15 2,2'-bis(4-methyl-2-oxazine), 2,2'-bis(4-phenyl-2-oxazine), 2,2'-bis(4-hexyloxazine), 2,2'-p-phenylene bis(2-oxazine), 2,2'-m-phenylene bis(2-oxazine), 2,2'-tetramethylene bis(4,4'-dimethyl-2-oxazine) and mixtures thereof.
26. A method as in claim 24 wherein the bis-oxazoline and/or bis-oxazine 20 compound is employed in said melt mixture product in an amount of from about 0.1 % to about 4% by weight of the terminally reactive polymer.
27. A method as in claim 17 wherein the chain extender is incorporated into said melt mixture product in an amount which increases polymer molecular weight but 25 does not substantially promote or induce crosslinking.
28. A method as in claim 17 wherein the chain extender comprises a modified polyamide chain extender.
- 30 29. A method of preparing a medical device comprising forming at least a portion of the device from a thermoplastic polymer composition, wherein the polymer
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composition comprises a melt mixture product of

- a) at least one terminally reactive polymer, and
- b) a chain extender.

5 30. A method as in claim 29 wherein the terminally reactive polymer has at least one active hydrogen and/or carboxylic acid group thereon.

31. A method as in claim 29 wherein said step of forming at least a portion of the device from a thermoplastic polymer composition comprises extruding a tube of said
10 polymer composition.

32. A method as in claim 31 wherein the medical device is a catheter or a balloon.

15 33. A method as in claim 29 wherein the medical device is a balloon, the method further comprising blowing a segment of the extruded tube at an elevated temperature and pressure to form the balloon.

32. A method as in claim 29 wherein the chain extender is incorporated into
20 said melt mixture product in an amount which increases polymer molecular weight but does not substantially promote or induce crosslinking.